



ESCOLA TÈCNICA SUPERIOR
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Universitat Rovira i Virgili



Gestió de Sistemes i Xarxes

Pràctica 2

curs 2023-24

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Objectius

Lab2

- Agafar una correcta metodologia de treball: Analitzar, planificar, accions reversibles, sistema de proves, verificació del bon comportament del sistema.
- Saber implementar scripts de manera correcta.
- Saber comprovar la correctesa dels scripts implementats.
- Saber instal·lar/actualitzar programari.

Lab3

- Entendre el boot del sistema, i els diferents nivells de run o targets
- Entendre, afegir/modificar i programar serveis linux

Lab4

- Analitzar l'ocupació del processador i el que s'està realitzant en un moment determinat -
- Monitorització
- Aprendre a usar els signals en la Bash
- Processos periòdics
- Analitzar cgroups i accounting de processos

Codi Scripts

```
$ Lab 2 - consulta
#!/bin/bash
# Script for show info of packages
# Author: Germán Puerto

# Check that haves params
if [ $# -eq 0 ]
then
    echo "ERROR: no params"
    exit -1
fi

# Check that packages are valid
for arg in "$@"; do
    if [ -z $arg ]
    then echo "ERROR: incorrect params";
        exit -1
    fi
done

updates=$(apt list --upgradable 2>/dev/null)

for pkg in "$@"; do
    echo "PACKAGE: $pkg";
    if [ ! -z "$(apt-cache show $pkg 2>/dev/null)" ]
    then
        echo "Version: "$(dpkg -l $pkg | tail -1 | awk '{ print $3 }');
        echo "Instalation date: " $(zgrep 'install ' /var/log/dpkg.log* | sort
| cut -f1,2,4 -d' ' | grep $pkg: | awk '{ print $1 " " " $2 }');
        update=$(grep $pkg <<< "$updates")
        if [ ! -z "$update" ]
        then
            echo "Updates: $update"
        fi
        echo $(apt-cache depends $pkg | grep Depèn | sed 's/Depèn/Depends/g');
        echo "Config files: $(dpkg -L $pkg) "
    else
        echo "NOT INSTALLED or NOT FOUND";
    fi
done
```

\$ Lab 2 - desinstal

```
#!/bin/bash
# Script for remove packages
# Author: Germán Puerto

# Check that has params
if [ $# -eq 0 ]
then
    echo "ERROR: no params"
    exit -1
fi

# Check that packages are valid
for arg in "$@"; do
    if [ -z $arg ]
    then
        echo "ERROR: incorrect params";
        exit -1
    fi
done

for pkg in "$@"; do
    echo "PACKAGE: $pkg";
    if [ ! -z "$(apt-cache show $pkg 2>/dev/null)" ]
    then
        echo "Sudo execution for remove $pkg";
        echo "COMMAND: sudo dpkg -r --force-depends $pkg";
        sudo dpkg -r --force-depends $pkg
    else
        echo "NOT INSTALLED or NOT FOUND";
    fi
done
```

\$ Lab 3 - consultaService

```
#!/bin/bash
# Script for show info of packages
# Author: Germán Puerto

# Functionality of package management.
pkgmanage(){
    echo "PACKAGE: <$1>";
    if [ ! -z "$(apt-cache show $1 2>/dev/null)" ]
    then
        echo "Version: "$(dpkg -l $1 | tail -1 | awk '{ print $3 }')';
        echo "Instalation date: " $(zgrep 'install ' /var/log/dpkg.log*
| sort | cut -f1,2,4 -d' ' | grep $1: | awk '{ print $1 " " $2 }');
        update=$(grep $1 <<< "$updates")
        if [ ! -z "$update" ]
    fi
}
```

```

        then
            echo "Updates: $update"
        fi
        echo $(apt-cache depends $1 | grep Depèn | sed
's/Depèn/Depends/g');
        echo "Config files: $(dpkg -L $1)"
    else
        echo "NOT INSTALLED or NOT FOUND";
    fi
}
# Check that has params
INFILE=/home/milax/LAB3/paquets
OUTFILE=/home/milax/paquets.txt
updates=$(apt list --upgradable 2>/dev/null)

if [ $# -eq 0 ]
then
    # CASE 1: no params. Read from INFILE
    if [ ! -f "$INFILE" ]
    then
        echo "ERROR: no file or params."
        exit 255
    else
        if [ -f "$OUTFILE" ]
        then
            rm $OUTFILE;
        fi

        touch $OUTFILE
        echo "WARNING: No params. Trying to read $INFILE" >> $OUTFILE

        for pkg in $(cat "$INFILE"); do
            pkgmanage $pkg >> $OUTFILE
        done
    fi
else
    # CASE 2: read from params of prompt.
    for arg in "$@"; do
        if [ -z $arg ]
        then
            echo "ERROR: incorrect params";
            exit 255
        fi
    done

    for pkg in "$@"; do
        pkgmanage $pkg
    done
fi

```

```

$ Lab 3 - consultad
#!/bin/sh
# Start/stop the consulta daemon.
#
### BEGIN INIT INFO
# Provides:          consulta
# Required-Start:    $remote_fs $syslog
# Required-Stop:     $remote_fs $syslog
# Default-Start:     2 3 4 5
# Default-Stop:      0 1 6
# Short-Description: Regular background program processing daemon
# Description:       consulta is a script for asking specs of a installed package.
### END INIT INFO

PATH=/bin:/usr/bin:/sbin:/usr/sbin
DESC="consulta daemon"
NAME=consultad
DAEMON=/usr/sbin/consultaService
PIDFILE=/var/run/consulta.pid
SCRIPTNAME=/etc/init.d/"$NAME"

# Checks if the daemon exists.
#test -f $DAEMON || exit 0

# For inicializing services.
. /lib/lsb/init-functions

# Read if exists a consulta config file
[ -r /etc/default/consulta ] && . /etc/default/consulta

case "$1" in
start)    log_daemon_msg "Starting consulta" "consulta"
          start_daemon -p $PIDFILE $DAEMON $EXTRA_OPTS
          log_end_msg $?
          ;;
stop)     log_daemon_msg "Stopping consulta" "consulta"
          killproc -p $PIDFILE $DAEMON
          RETVAL=$?
          [ $RETVAL -eq 0 ] && [ -e "$PIDFILE" ] && rm -f $PIDFILE
          log_end_msg $RETVAL
          ;;
restart)  log_daemon_msg "Restarting consulta" "consulta"
          $0 stop
          $0 start
          ;;
status)
          status_of_proc -p $PIDFILE $DAEMON $NAME && exit 0 || exit $?

```

```

        ;;
*)    log_action_msg "Usage: /etc/init.d/sconsulta {start|stop|status|restart}"
        exit 2
        ;;
esac
exit 0

```

\$ Lab 3 - consulta.service

```

[Unit]
Description=Asks for managed packages.

[Service]
Type=simple
ExecStart=/bin/bash /usr/sbin/consultaService

[Install]
WantedBy=multi-user.target

```

\$ Lab 3 - auxSYSV.sh

```

#!/bin/bash

# Si no se ejecuta con sudo, salir
if [[ $(whoami) != "root" ]]; then
    echo "Este script debe ejecutarse con sudo."
    exit 1
fi

cp /home/milax/consultad /etc/init.d/consultad

# Hacerlo ejecutable
chmod +x /etc/init.d/consultad

# Registrar el servicio
ln -s /etc/init.d/consultad /etc/rc5.d/S99consultad

```

\$ Lab 3 - auxSYSTEMD.sh

```

#!/bin/bash

# Si no se ejecuta con sudo, salir
if [[ $(whoami) != "root" ]]; then
    echo "Este script debe ejecutarse con sudo."
    exit 1
fi

cp consulta.service /etc/systemd/system/consulta.service

chmod 644 /etc/systemd/system/consulta.service

```

```
$ Lab 4 - crontab.sh
```

```
#!/bin/bash
```

```
# Add consulta to cron
```

```
crontab /home/milax/cronAux.txt
```

```
$ Lab 4 - cgroup
```

```
#!/bin/bash
```

```
# Obtain the cgroup of the current shell
```

```
cgroup=$(cat /proc/self/cgroup | cut -d: -f2)
```

```
# Function to show information of parent processes recursively
```

```
mostrar_pares() {
```

```
    pid=$1
```

```
    # Show information of the current PID
```

```
    echo "PID: $pid"
```

```
    echo "PPID: $(ps -o ppid= -p $pid)"
```

```
    echo "Comanda: $(ps -o command= -p $pid)"
```

```
    # Get the parent PID
```

```
    parent_pid=$(ps -o ppid= -p $pid)
```

```
    parent_pid=$(echo "$parent_pid" | tr -d '[:space:]')
```

```
    if [[ -z "$parent_pid" || 0 -eq $parent_pid ]]
```

```
    then
```

```
        return
```

```
    fi
```

```
    # If the parent is not in the same cgroup, exit recursion
```

```
    if [[ ! $(cat /proc/$parent_pid/cgroup | cut -d: -f2) == "$cgroup" ]]
```

```
    then
```

```
        return
```

```
    fi
```

```
    # Show information of the parent process recursively
```

```
    mostrar_pares $parent_pid
```

```
}
```

```
# Show information of the current PID and its childs
```

```
echo "INFO: pid, ppid i la comanda dels processos que s'han generat a partir d'aquesta shell"
```

```
pstree -pah $(ps -o ppid= $$)
```

```
# Show information of the current PID and its parents recursively
```

```
echo "INFO: pid, ppid i la comanda dels processos pare que han generat a la shell"
```

```
mostrar_pares $$
```


Path Absolut

Lab2

- /home/milax/LAB2

Lab3

- consultaService: /usr/sbin/consultaService
- consultad
 - o SYSV: /etc/init.d/consultad
 - o SYSTEMD: el systemctl executa consultaService
- Consulta.service: /etc/systemd/System/consulta.service
- Fitxers auxiliars: /home/milax/LAB3

Lab4

- /home/milax/LAB4

Permisos + UID/GUID Fitxer

Lab2

```
-rwxr-x--- 1 milax milax 922 8 de març 09:32 consulta
-rwxr-x--- 1 milax milax 586 8 de març 09:32 desinstal
```

Lab3

```
-rwxr-x--- 1 root root 1545 8 de març 16:06 /usr/sbin/consultaService
-rwxr-xr-x 1 root root 1444 8 de març 16:03 /etc/init.d/consultad
-rw-r--r-- 1 root root 147 8 de març 16:35 /etc/systemd/system/consulta.service
-rwxr-xr-x 1 milax milax 249 8 de març 16:22 auxSYSTEMD.sh
-rwxr-xr-x 1 milax milax 320 8 de març 16:03 auxSYSV.sh
```

Lab4

```
-rwxr-xr-x 1 milax milax 1140 8 de març 18:50 cgroup
-rw-r--r-- 1 milax milax 932 8 de març 16:50 cronAux.txt
-rwxr-xr-x 1 milax milax 69 8 de març 16:51 crontab.sh
```

Joc de proves

Lab2

- Consulta

```
milax@casa:~$ ./consulta postgresql
PACKAGE: postgresql
Version: 15+248
Instalation date: 2024-02-13 20:40:49
Depends: postgresql-15
Config files: /.
/usr
/usr/share
/usr/share/doc
/usr/share/doc/postgresql
/usr/share/doc/postgresql/changelog.gz
/usr/share/doc/postgresql/copyright

milax@casa:~$ ./consulta vim postgresql
PACKAGE: vim
Version: 2:9.0.1378-2
Instalation date: 2024-02-13 20:48:05
Depends: vim-common Depends: vim-runtime Depends: libacl1 Depends: libc6 Depends: libgpm2 Depends: libselinux1 Depends: libsodium23 Depends: libtinfo6
Config files: /.
/usr
/usr/bin
/usr/bin/vim.basic
/usr/share
/usr/share/bug
/usr/share/bug/vim
/usr/share/bug/vim/presubj
/usr/share/bug/vim/script
/usr/share/doc
/usr/share/doc/vim
/usr/share/doc/vim/NEWS.Debian.gz
/usr/share/doc/vim/changelog.Debian.gz
/usr/share/doc/vim/changelog.gz
/usr/share/doc/vim/copyright
/usr/share/lintian
/usr/share/lintian/overrides
/usr/share/lintian/overrides/vim
PACKAGE: postgresql
Version: 15+248
Instalation date: 2024-02-13 20:40:49
Depends: postgresql-15
Config files: /.
/usr
/usr/share
/usr/share/doc
/usr/share/doc/postgresql
/usr/share/doc/postgresql/changelog.gz
/usr/share/doc/postgresql/copyright

milax@casa:~$ ./consulta NO EXISTE
PACKAGE: NO
NOT INSTALLED or NOT FOUND
PACKAGE: EXISTE
NOT INSTALLED or NOT FOUND
```

- Desinstal

```
milax@casa:~$ ./desinstal vim
PACKAGE: vim
Sudo execution for remove vim
COMMAND: sudo dpkg -r --force-depends vim
[sudo] contrasenya per a milax:
(S'està llegend la base de dades... hi ha 572731 fitxers i directoris instal·lats actualment.)
S'està desinstal·lant vim (2:9.0.1378-2)...

milax@casa:~$ ./desinstal NO EXISTE
PACKAGE: NO
NOT INSTALLED or NOT FOUND
PACKAGE: EXISTE
NOT INSTALLED or NOT FOUND
```

Lab3

IMPORTANT: per a comprovar el correcte funcionament del script de consulta, en comptes de consultar a /tmp/paquets, consulta /home/milax/paquets, ja que al fer reboot la carpeta tmp borra el seu contingut.

- SYSV

```
milax@casa:~$ sudo /etc/init.d/consultad start
[sudo] contrasenya per a milax:
Starting consultad (via systemctl): consultad.service.
milax@casa:~$ sudo /etc/init.d/consultad stop
Stopping consultad (via systemctl): consultad.service.
milax@casa:~$ sudo /etc/init.d/consultad status
○ consultad.service - LSB: Regular background program processing daemon
   Loaded: loaded (/etc/init.d/consultad; generated)
   Active: inactive (dead) since Fri 2024-03-08 16:18:27 CET; 7s ago
  Duration: 11min 20.670s
   Docs: man:systemd-sysv-generator(8)
  Process: 502 ExecStart=/etc/init.d/consultad start (code=exited, status=0/SUCCESS)
  Process: 1457 ExecStop=/etc/init.d/consultad stop (code=exited, status=0/SUCCESS)
     CPU: 8ms

de març 08 15:19:24 casa systemd[1]: Starting consultad.service - LSB: Regular background program processing daemon...
de març 08 16:07:06 casa consultad[502]: Starting consulta: consulta.
de març 08 16:07:06 casa systemd[1]: Started consultad.service - LSB: Regular background program processing daemon.
de març 08 16:18:26 casa systemd[1]: Stopping consultad.service - LSB: Regular background program processing daemon...
de març 08 16:18:27 casa consultad[1457]: Stopping consulta: consulta.
de març 08 16:18:27 casa systemd[1]: consultad.service: Deactivated successfully.
de març 08 16:18:27 casa systemd[1]: Stopped consultad service - LSB: Regular background program processing daemon.
```

- SYSTEMD

```
milax@casa:~$ sudo systemctl start consulta
milax@casa:~$ sudo systemctl status consulta
● consultad.service - LSB: Regular background program processing daemon
   Loaded: loaded (/etc/init.d/consultad; generated)
   Active: active (exited) since Fri 2024-03-08 16:31:36 CET; 4s ago
     Docs: man:systemd-sysv-generator(8)
  Process: 2043 ExecStart=/etc/init.d/consultad start (code=exited, status=0/SUCCESS)
     CPU: 1.735s

de març 08 16:31:34 casa systemd[1]: Starting consultad.service - LSB: Regular background program processing daemon.
de març 08 16:31:36 casa consultad[2043]: Starting consulta: consulta.
de març 08 16:31:36 casa systemd[1]: Started consultad.service - LSB: Regular background program processing daemon.
milax@casa:~$ sudo systemctl stop consulta
milax@casa:~$ sudo systemctl status consulta
○ consultad.service - LSB: Regular background program processing daemon
   Loaded: loaded (/etc/init.d/consultad; generated)
   Active: inactive (dead) since Fri 2024-03-08 16:31:45 CET; 1s ago
  Duration: 9.724s
     Docs: man:systemd-sysv-generator(8)
  Process: 2043 ExecStart=/etc/init.d/consultad start (code=exited, status=0/SUCCESS)
  Process: 2140 ExecStop=/etc/init.d/consultad stop (code=exited, status=0/SUCCESS)
     CPU: 9ms

de març 08 16:31:34 casa systemd[1]: Starting consultad.service - LSB: Regular background program processing daemon.
de març 08 16:31:36 casa consultad[2043]: Starting consulta: consulta.
de març 08 16:31:36 casa systemd[1]: Started consultad.service - LSB: Regular background program processing daemon.
de març 08 16:31:45 casa systemd[1]: Stopping consultad.service - LSB: Regular background program processing daemon.
de març 08 16:31:45 casa consultad[2140]: Stopping consulta: consulta.
de març 08 16:31:45 casa systemd[1]: consultad.service: Deactivated successfully.
```

```
milax@casa:~$ systemd-analyze blame
5.538s consultad.service
1.456s mrtg.service
1.088s systemd-networkd.service
739ms udisks2.service
720ms systemd-binfmt.service
694ms virtualbox-guest-utils.service
613ms dev-sda1.device
515ms accounts-daemon.service
401ms systemd-udev-trigger.service
393ms systemd-logind.service
362ms modprobe@drm.service
344ms NetworkManager.service
329ms keyboard-setup.service
275ms modprobe@loop.service
238ms modprobe@dm_mod.service
234ms user@1000.service
226ms modprobe@efi_pstore.service
202ms systemd-journald.service
190ms polkit.service
185ms systemd-udevd.service
182ms e2scrub_reap.service
157ms upower.service
154ms dbus.service
121ms phpsessionclean.service
90ms lightdm.service
82ms rsyslog.service
76ms systemd-journal-flush.service
```

Lab4

```

milax@casa:~/LAB4$ ./crontab.sh
milax@casa:~/LAB4$ crontab -l
# Edit this file to introduce tasks to be run by cron.
#
# Each task to run has to be defined through a single line
# indicating with different fields when the task will be run
# and what command to run for the task
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').
#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h dom mon dow  command
0 7 * * 1,3,5 /etc/init.d/consultad start

```